

ABSTRACT OF THE DISCLOSURE

A plasma process reactor is disclosed that allows for greater control in varying the functional temperature range for enhancing semiconductor processing and reactor cleaning. The temperature is controlled by splitting the process gas flow from a single gas manifold that injects the process gas behind the gas distribution plate into two streams where the first stream goes behind the gas distribution plate and the second stream is injected directly into the chamber. By decreasing the fraction of flow that is injected behind the gas distribution plate, the temperature of the gas distribution plate can be increased. The increasing of the temperature of the gas distribution plate results in higher O₂ plasma removal rates of deposited material from the gas distribution plate. Additionally, the higher plasma temperature aids other processes that only operate at elevated temperatures not possible in a fixed temperature reactor.

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